

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing:

22 June 2000 (22.06.00)

International application No.:

PCT/GB99/03821

Applicant's or agent's file reference:

P/23272.WO/MWM

International filing date:

16 November 1999 (16.11.99)

Priority date:

11 December 1998 (11.12.98)

Applicant:

BRASH, Robert, Alan, David et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International preliminary Examining Authority on:

03 April 2000 (03.04.00)



in a notice effecting later election filed with the International Bureau on:

2. The election



was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

MOLYNEAUX, Martyn W.  
LANGNER PARRY  
52-54 High Holborn  
London WC1V 6RR  
GRANDE BRETAGNE



PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing

(day/month/year)

11.09.00

Applicant's or agent's file reference

P/23272.WO/MWM

IMPORTANT NOTIFICATION

International application No.

PCT/GB99/03821

International filing date (day/month/year)

16/11/1999

Priority date (day/month/year)

11/12/1998

Applicant

WICKS AND WILSON LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer

De Caemel, J-M

Tel. +49 89 2399-2557



## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P/23272.WO/MWM		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) <b>FOR FURTHER ACTION</b>
International application No. PCT/GB99/03821	International filing date (day/month/year) 16/11/1999	Priority date (day/month/year) 11/12/1998
International Patent Classification (IPC) or national classification and IPC G01B11/24		
Applicant WICKS AND WILSON LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  03/04/2000	Date of completion of this report  1. 03. 00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Mielke, W  Telephone No. +49 89 2399 2661 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03821

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-8 as originally filed

**Claims, No.:**

1-9 as originally filed

**Drawings, sheets:**

1/2,2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03821

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/GB99/03821

Item V:

Figures 8a,b in EP-A2-305107 indicate a three dimensional scanner providing light lines from above and below with a steppwise driven prism 46, light splitter 52, and upper and lower reflectives 53,54. See column 7 lines 15-40. Here the invention starts by proposing a simpler body scanning equipment with a switchable reflector means for directing light alternately in the two different directions. Independent claims 1,3. Such an alternation is not indicated with the existing state of the art, so that claims 1-9 are regarded to meet the criteria of article 33(2-4) PCT.

Item VIII:

Independent claim 3 represents an embodiment of the device of independent claim 1. Furthermore it seems to be given with dependent claim 2. Article 6 and rule 13.3 PCT.

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P/23272.WO/MWM</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 99/ 03821</b>	International filing date (day/month/year) <b>16/11/1999</b>	(Earliest) Priority Date (day/month/year) <b>11/12/1998</b>
Applicant <b>WICKS AND WILSON LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.  
☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 99/ 03821

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The abstract is changed as follows:  
Line 16: after "111" to be deleted  
Line 17 to 19 : to be deleted



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/03821

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G01B11/24

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 305 107 A (L.B.P PARTNERSHIP) 1 March 1989 (1989-03-01)  see introduction; column 6, line 27 - line 47; figures 3-5 column 7, line 15 -column 9, line 29; figures 8A-9 -----	1-4,6-8  5,8
P,X	EP 0 919 784 A (R. SEIFERT) 2 June 1999 (1999-06-02) se the whole document; figures 1-3B -----	1-9
X	WO 92 08949 A (MESACON GESELLSCHAFT FÜR MESSZECHNIK MBH) 29 May 1992 (1992-05-29) page 15, line 8 -page 21, line 30; figures 1-9 -----	1-4,6,8



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

31 January 2000

Date of mailing of the international search report

07/02/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Visser, F

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03821

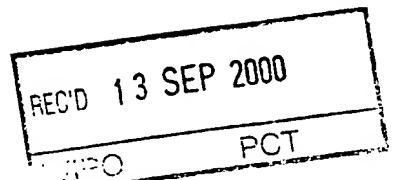
Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 305107	A	01-03-1989	JP 1158307 A	21-06-1989
EP 919784	A	02-06-1999	DE 19753246 A	10-06-1999
WO 9208949	A	29-05-1992	DE 4037383 A	21-05-1992
			DE 59104625 D	23-03-1995
			EP 0511356 A	04-11-1992
			US 5774220 A	30-06-1998

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference <b>P/23272.WO/MWM</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) <b>FOR FURTHER ACTION</b>	
International application No. <b>PCT/GB99/03821</b>	International filing date (day/month/year) <b>16/11/1999</b>	Priority date (day/month/year) <b>11/12/1998</b>	
International Patent Classification (IPC) or national classification and IPC <b>G01B11/24</b>			
Applicant <b>WICKS AND WILSON LIMITED et al.</b>			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand <b>03/04/2000</b>	Date of completion of this report <b>11.09.00</b>
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer <b>Mielke, W</b> Telephone No. +49 89 2399 2661 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03821

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-8 as originally filed

**Claims, No.:**

1-9 as originally filed

**Drawings, sheets:**

1/2,2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03821

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

### 2. Citations and explanations

**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/GB99/03821

Item V:

Figures 8a,b in EP-A2-305107 indicate a three dimensional scanner providing light lines from above and below with a steppwise driven prism 46, light splitter 52, and upper and lower reflectives 53,54. See column 7 lines 15-40. Here the invention starts by proposing a simpler body scanning equipment with a switchable reflector means for directing light alternately in the two different directions. Independent claims 1,3. Such an alternation is not indicated with the existing state of the art, so that claims 1-9 are regarded to meet the criteria of article 33(2-4) PCT.

Item VIII:

Independent claim 3 represents an embodiment of the device of independent claim 1. Furthermore it seems to be given with dependent claim 2. Article 6 and rule 13.3 PCT.

From the INTERNATIONAL SEARCHING AUTHORITY

**PCT**NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

To:

LANGNER PARRY  
Attn. MOLYNEAUX, Martyn W.  
52-54 High Holborn  
London WC1V 6RR  
UNITED KINGDOMDate of mailing  
(day/month/year)

07/02/2000

Applicant's or agent's file reference

P/23272.WO/MWM

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/GB 99/03821

International filing date  
(day/month/year)

16/11/1999

Applicant

WICKS AND WILSON LIMITED et al.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority

European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Bakari Mwamboga

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the International application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.



## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.



857534  
JC18 Rec'd PCT/PTO 06 JUN 2001

INVESTOR IN PEOPLE

Wicks & Wilson Limited  
% Langner Parry  
High Holborn House  
52-54 High Holborn  
LONDON  
WC1V 6RR

**The Patent Office**  
Concept House  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

Examiner: 01633 813716  
†E-mail: mark.pullen@patent.gov.uk  
Switchboard: 01633 814000  
Fax: 01633 814444

**Your Reference:** P/23272.GB/MWM  
**Application No:** GB 9827384.0

10 May 2000

Dear Sirs

**Patents Act 1977: Search Report under Section 17(5)**

I enclose two copies of my search report and a copy of the citations.

**Publication**

I estimate that, provided you have met all formal requirements, preparations for publication of your application will be completed soon after **13 June 2000**. You will then receive a letter informing you of completion and telling you the publication number and date of publication.

**Amendment/withdrawal**

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Yours faithfully

Mark A Pullen  
Examiner

---

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INVESTOR IN PEOPLE

Application No: GB 9827384.0  
Claims searched: All

Examiner: Mark A Pullen  
Date of search: 8 May 2000

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.R): G1A (AAJD, AEG)  
Int Cl (Ed.7): A61B 5/107, G01B 11/02, 11/08, 11/24, G06T 7/00  
Other: ONLINE : WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y ✓	GB 2264602 A (3D SCANNERS) see Figure 1	1 at least
A ✓	GB 2264601 A (3D SCANNERS) see Figure 1	1,3
Y ✓	GB 2195178 A (BRAMLEIGH) see Figures 5 and 6 and page 3 lines 35-51	1 at least
A ✓	EP 0113691 A2 (CRUICKSHANK) see Figure 3 and page 6 lines 12-24	1,3
X ✓	WO 83/04303 A1 (KLEINHUBER) see Figure 1	1 at least
A ✓	JP 070313492 A (TERUMO) 05.12.95 (see Figure 1 and also Abstract)	1,3

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# INTERNATIONAL SEARCH REPORT

Internat Application No  
PCT/Gb 99/03821

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01B11/24

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 305 107 A (L.B.P PARTNERSHIP) 1 March 1989 (1989-03-01)  see introduction; column 6, line 27 - line 47; figures 3-5 column 7, line 15 -column 9, line 29; figures 8A-9 ---	1-4, 6-8  5, 8
P, X	EP 0 919 784 A (R. SEIFERT) 2 June 1999 (1999-06-02) se the whole document; figures 1-3B ---	1-9
X	WO 92 08949 A (MESACON GESELLSCHAFT FÜR MESSZECHNIK MBH) 29 May 1992 (1992-05-29) page 15, line 8 -page 21, line 30; figures 1-9 -----	1-4, 6, 8

☐ Further documents are listed in the continuation of box C.

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31 January 2000

Date of mailing of the international search report

07/02/2000

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03821

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			EP 0511356 A	04-11-1992
			US 5774220 A	30-06-1998

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification<sup>7</sup> :

G01B 11/24

A1

(11) International Publication Number:

WO 00/36370

(43) International Publication Date:

22 June 2000 (22.06.00)

(21) International Application Number: PCT/GB99/03821

(22) International Filing Date: 16 November 1999 (16.11.99)

(30) Priority Data:

9827384.0

11 December 1998 (11.12.98) GB

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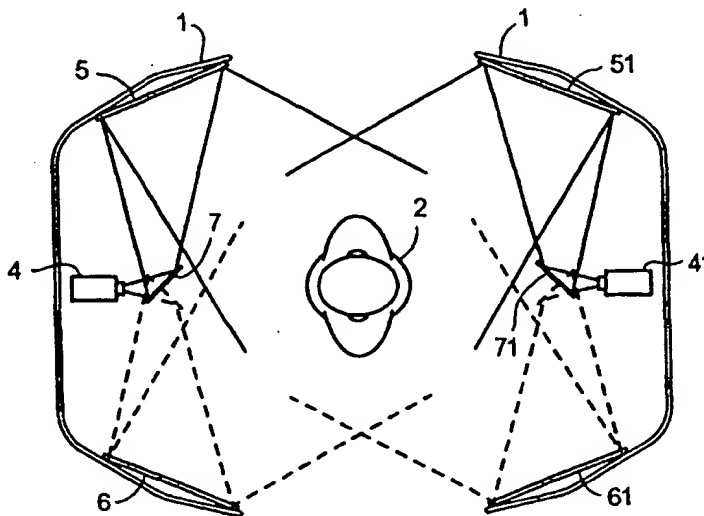
(74) Agents: MOLYNEAUX, Martyn, W. et al.; Langner Parry, 52/54 High Holborn, London WC1V 6RR (GB).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: BODY SCANNING EQUIPMENT



(57) Abstract

A body scanning equipment includes at least two sets of apparatus located at a front and a rear respectively of a body (2) to be scanned, and each set of apparatus has a scanning device (4), mirrors (5), (6) spaced on opposing sides of the scanning device for directing radiant energy to opposing sides of the body and a pivotable mirror (7) for directing radiant energy alternatively between the scanning device and the first mirror (5) and the second mirror (6); by providing one pair of sets of apparatus a complete 360° circumference of a body may be scanned. By providing a further pair of sets of apparatus at a different elevation to the first pair of sets, so a complete human body may be scanned. The scanning apparatus is located in a booth (1) for installation in a store and output from the scanning apparatus is, preferably, provided to a garment material cutting apparatus (111).

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BODY SCANNING EQUIPMENT

5 This invention relates to body scanning equipment and, in particular, although not exclusively to, a body scanning equipment for use in the garment industry.

10 It is a wish in the garment industry for most, if not all, clothing to be custom made. At present, bespoke tailoring, i.e. custom made garments, are expensive to produce and most garments sold are made in different predetermined sizes and sold ready-to-wear. So as to satisfy the need for custom manufacturer garments, there is a need to define a customer's shape so that the garment can be manufactured to fit accurately. Measurement of the

15 human body using a conventional tailor's tape measure has been shown to be prone to human error and is limited to taking a number of dimensions by time and convenience considerations. An automatic scanner which may quickly provide a large number of accurate measurements would

20 enable custom tailoring to produce a better fit with fewer or no fitting sessions, or alternatively, to match the customer to a wider range of predefined sizes and size variants.

25 Body scanning apparatus is known to produce prosthesis, for example, but such equipment tends to be large in size and extremely costly.

30 So as to be affordable to chain and high street stores, the cost of manufacture of body scanning equipment must be kept to a minimum. Known three-dimensional scanning devices contain expensive components such as good quality cameras and electronics to control the cameras and



produce a three-dimensional image. Each scanning device is limited by its position and field of view as to how much of the body surface the device can capture. Therefore, if a large part of a body surface is required to be captured, then it is necessary to use plural scanning devices spaced around the person being scanned, and the data from each scanning device is joined together to construct the whole, 360°, body surface. While such an arrangement of scanning devices overcomes the problem of capture, it demands a large number of scanning device positions and, hence, leads to a high manufacturing cost.

A further problem is one of the size of a scanning booth in which the scanning devices are located. Typical known scanning devices work best at ranges of about 2 metres from the surface to be scanned. Although, in theory, closer ranges are possible if the capture field of view of the scanning device is reduced, or if very wide optics are used on the scanning device. However, a smaller field of view leads to the requirement of additional scanning devices with consequential greater cost, and wide angle optics give greater distortion and, therefore, lower accuracy, as well as being costly.

The present invention seeks to provide a body scanning equipment which substantially mitigates the foregoing disadvantages.

According to a broadest aspect of this invention there is provided a body scanning equipment including one set of apparatus locate to scan a portion of a body, said set of apparatus comprising scanning means, reflector means associated with said scanning means, said reflector means including first and second reflectors spaced on opposing

sides of said scanning means for directing radiant energy to opposing sides of said body, and switchable reflector means for directing radiant energy alternately between said scanning means and said first and second reflectors whereby substantially a 180° scan of said body may be made.

Such a set of apparatus may be used, for example, in a medical environment where it is desired to scan a face of a person.

Where a prosthesis is required to be made or body scanning equipment for use in the garment industry, for example, then it is preferable that two sets of apparatus be provided.

Accordingly in a feature of this invention there is provided a body scanning equipment including two sets of apparatus located to scan opposing front and rear portions of a body to be scanned and each set of apparatus comprising scanning means, reflector means associated with each scanning means, each said reflector means including first and second reflectors spaced on opposing sides of said scanning means for directing radiant energy to opposing sides of said body, and switchable reflector means for directing radiant energy alternately between said scanning means and said first and second reflectors, whereby a complete 360° scan of said body may be made.

The scanning means may comprising a camera having a viewing axis and an illumination means having an illumination axis which is offset from said camera viewing axis.

Preferably, two pairs of sets of apparatus are provided, each pair being located in a different elevational position with respect to said body so that each pair is able to scan a whole portion of a body and the

elevational location of the pairs being arranged such that a complete body may be scanned.

Conveniently, said first and second reflectors and said switchable reflector means are each formed by a  
5 respective mirror.

Advantageously, said sets of apparatus are mounted in a booth, typically approximately 2 metres square and about 2.4 metres high.

Preferably, each scanning means provides an output  
10 signal to processor means including means for computing surface data from images received from each opposing side of said body, means for producing aligned data from said surface data, means for producing a signal from said aligned data indicative of the surfaces of said body  
15 joinedtogether through 360°, and means for calculating surface measurements derived from said means for producing.

Advantageously, said means for calculating is connected to a numerically controlled garment cutting machine which may in turn be connected to an automated  
20 garment assembly apparatus.

The invention will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 shows a top plan view of an apparatus in  
25 accordance with this invention,

Figure 2 shows a side view of the apparatus shown in Figure 1,

Figure 3 shows, in schematic form, a scanning device used in this invention, and

30 Figure 4 shows a flow diagram of the operation of the invention.

In the Figures like reference numerals denote like parts.

5 The body scanning equipment shown in Figures 1 and 2 is located within a booth 1 shown in the drawings as two separate halves, although the booth may be a single member having a door. The booth typically has dimensions of approximately 2 metres square and about 2.4 metres in height. Approximately centrally located within the booth is shown a body 2 of a customer to be scanned. The body scanning apparatus includes, in the exemplary embodiment, 10 four sets of apparatus arranged in two pairs. A first pair of sets of apparatus is arranged to scan the top portion of the body 2 and the second pair of sets of apparatus is arranged to scan the lower portion of the body 2.

15 Each set of a pair of apparatus is arranged to scan either a front or a rear portion of the body 2. Because each set of apparatus is the same as the other sets, the invention will be described in relation to a single set of apparatus.

20 Each set of apparatus has a scanning device 4 comprising, as shown in Figure 3, a camera 241 having a viewing axis and an illumination device, such as a lamp 242, having an illumination axis which is different from the viewing axis of the camera. The illumination axis of 25 the lamp 242 is, preferably, at a different elevation from the viewing axis of the camera 241, although such is not essential.

30 A pair of inclined mirrors 5, 6 are attached on each side of the optical axis of the scanning device 4 so as to direct radiant energy to a respective side of the body 2. A pivotable mirror 7 is located in front of the scanning device 4 so as to alternately reflect radiant

energy to a respective one of the mirrors 5 or 6. By pivotally skewing the mirror 7 between two positions, two effective scanner positions are derived from a single scanning device 4. The other set of apparatus on the same elevational level as the scanning device 4 and the mirrors 5, 6 and 7 is denoted by reference numerals 41, 51, 61 and 71 respectively. Scans are made sequentially with the pivotable mirror 7, 71 in each of its two positions so that the complete 360° of a body surface may be scanned with just two scanning devices. A further pair of sets of apparatus are provided elevationally below the above-mentioned pair of sets of apparatus and are denoted by reference numerals 104, 105, 106, 107 and 141, 151, 161 and 171, so that the whole 360° and whole height of the body 2 may be scanned.

The operation of the equipment will now be described with reference to Figure 4.

The lamp 242 of each scanning device projects a pattern of light onto the surface of the body 2. The pattern of light may be obtained by a sequential series of light scans formed of narrow slits of light which are respectively projected onto different elevational locations of the body or, more usually, light is shone through a grating having plural horizontal slits therein. The body is scanned by the camera 241 and the data is processed to obtain three-dimensional surface co-ordinate data. The pattern of light that is projected comprising a series of horizontal lines is deflected by the contours of the surface of the body so that the lines appear bent when viewed at an offset angle by the camera 241. Using a sequence of such line patterns, and applying triangulation

calculations to the amount by which the lines have been deflected up or down at each point on the surface, allows the surface contours to be mapped.

In the course of a scan each of the four scanning devices captures two images, one from each position of the pivotable mirror 4, 41, 104, 141. Thus, at the end of the scanning process a total of eight three-dimensional images are produced which represent eight overlapping sections of the surface of the body 2. Output from the camera of the scanning devices is applied to a processor 100. Using software, the image data from the respective positions of the mirror 7, 71, 104, 141 is computed 101 and the computed surfaces are aligned 102. The aligned surfaces are joined together at step 103 where a three-dimensional representation of the whole body surface is produced. Having obtained the three-dimensional representation of the surface of the body, automated measurements are taken from the surface data at step 104 to be used in much the same way as a tailor on the actual person.

The manner by which the processor operates is described in:

Scanning Moire Method and Automatic Measurement of 3-D Shapes Applied Optics, vol. 16, No. 8. Masanori Idesawa et al. Aug. 1977, and

Moire Topology

Applied Optics, vol.9, No. 6. H. Takasaki June 1970.

It will, thus, be appreciated that the measurements are made more quickly, non-invasively, and with greater accuracy and consistency than can be achieved manually. The measurements may be supplied as output signals to a garment material cutting machine 111, known per se, and to

a garment assembly unit 112, known per se, so that custom fitted clothing is provided.

5 The foregoing invention overcomes the problems of cost and size and the invention provides an accurate match in geometric accuracy and colour between pairs of image sections taken with the same scanning device. The invention, by using the novel optical arrangement, reduces the amount of software data processing that is needed to match the sections of image in order to make a seamless,  
10 all round, surface.

CLAIMS:

1. A body scanning equipment including one set of apparatus (1) located to scan a portion of a body (2), said  
5 set of apparatus comprising scanning means (4), reflector means (5, 6) associated with said scanning means, said reflector means including first and second reflectors spaced on opposing sides of said scanning means for directing radiant energy to opposing sides of said body,  
10 and switchable reflector means (7) for directing radiant energy alternately between said scanning means and said first and second reflectors whereby substantially a 180° scan of said body may be made.

15 2. An equipment as claimed in claim 1, wherein two sets of apparatus are provided.

3. A body scanning equipment including two sets of apparatus (1) located to scan opposing front and rear  
20 portions of a body (2) to be scanned and each set of apparatus comprising scanning means (4; 41), reflector means (5, 6; 51, 61) associated with each scanning means, each said reflector means including first and second reflectors spaced on opposing sides of said scanning means  
25 for directing radiant energy to opposing sides of said body, and switchable reflector means (7; 71) for directing radiant energy alternately between said scanning means and said first and second reflectors, whereby a complete 360° scan of said body may be made.



4. An equipment as claimed in claim 3, wherein scanning means comprises a camera (241) having a viewing axis and an illumination means (242) having an illumination axis which is offset from said camera viewing axis.

5. An equipment as claimed in claim 3 or 4, wherein two pairs of sets of apparatus are provided, each pair being located in a different elevational position with respect to said body so that each pair is able to scan a whole portion of a body and the elevational location of the pairs being arranged such that a complete body may be scanned.

6. An equipment as claimed in claims 3, 4 or 5, wherein said first and second reflectors and said switchable reflector means are each formed by a respective mirror.

7. An equipment as claimed in any of claims 3 to 6, wherein said sets of apparatus are mounted in a booth, typically approximately 2 metres square and about 2.4 metres high.

8. An equipment as claimed in any preceding claim, wherein each scanning means provides an output signal to processor means (100) including means (101) for computing surface data from images received from each opposing side of said body, means (102) for producing aligned data from said surface data, means (103) for producing a signal from said aligned data indicative of the surfaces of said body joined together through 360°, and means (104) for

calculating surface measurements derived from said means  
for producing.

5 9. An equipment as claimed in claim 8, wherein said means  
for calculating is connected to a numerically controlled  
garment cutting machine (111) which may in turn be  
connected to an automated garment assembly apparatus (112).

1 / 2

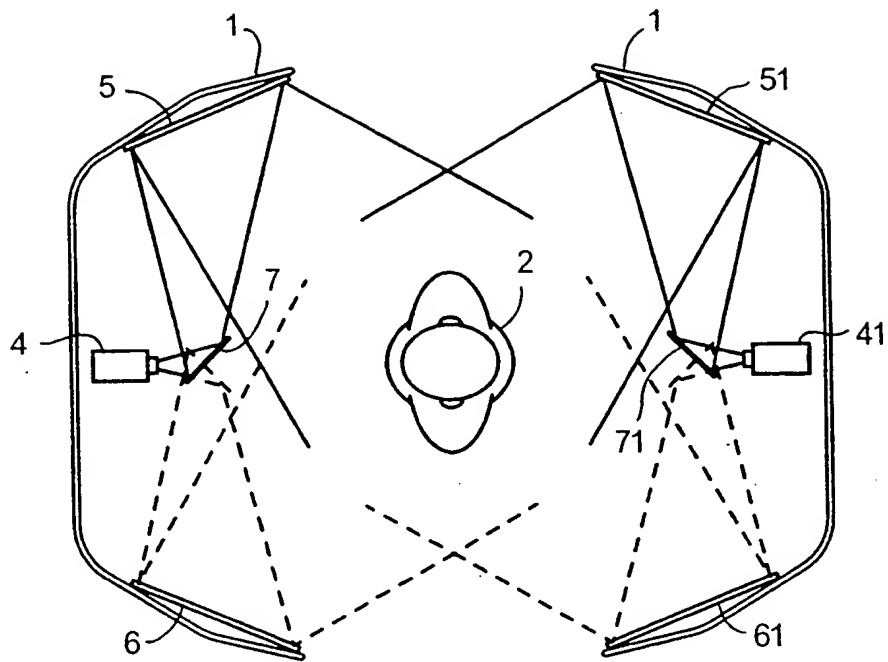


FIG. 1

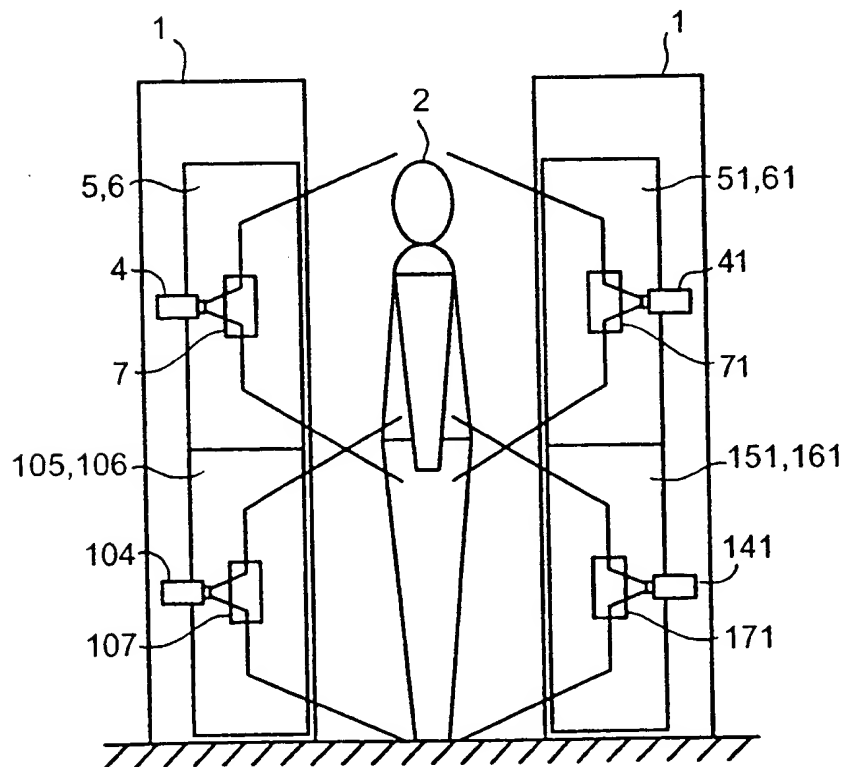


FIG. 2

SUBSTITUTE SHEET (RULE 26)

2 / 2

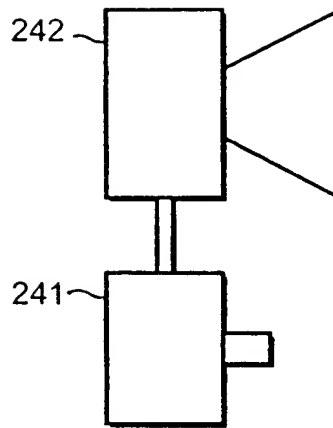


FIG. 3

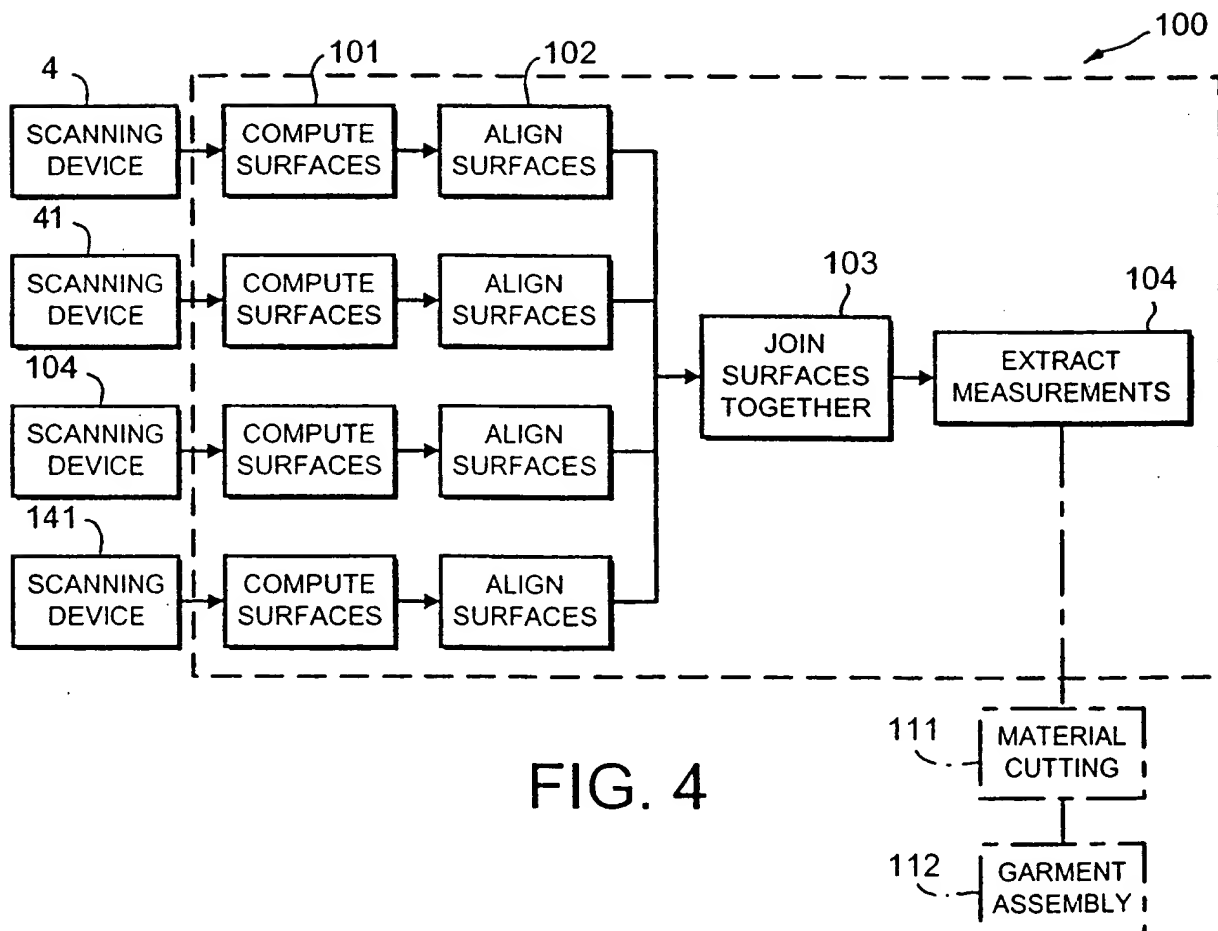


FIG. 4



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification<sup>7</sup>:

G01B 11/24

A1

(11) International Publication Number:

WO 00/36370

(43) International Publication Date:

22 June 2000 (22.06.00)

(21) International Application Number: PCT/GB99/03821

(22) International Filing Date: 16 November 1999 (16.11.99)

(30) Priority Data:  
9827384.0

11 December 1998 (11.12.98) GB

(71) Applicant (for all designated States except US): WICKS AND WILSON LIMITED [GB/GB]; Morse Road, West Ham Industrial Estate, Basingstoke, Hants RG22 6PG (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BRASH, Robert, Alan, David [GB/GB]; Oak Lodge, Hensting Lane, Fishers Pond, Hampshire SO50 7HH (GB). TANNER, Timothy [GB/GB]; 9 Aspin Way, Darby Green, Camberley, Surrey GU17 0BP (GB).

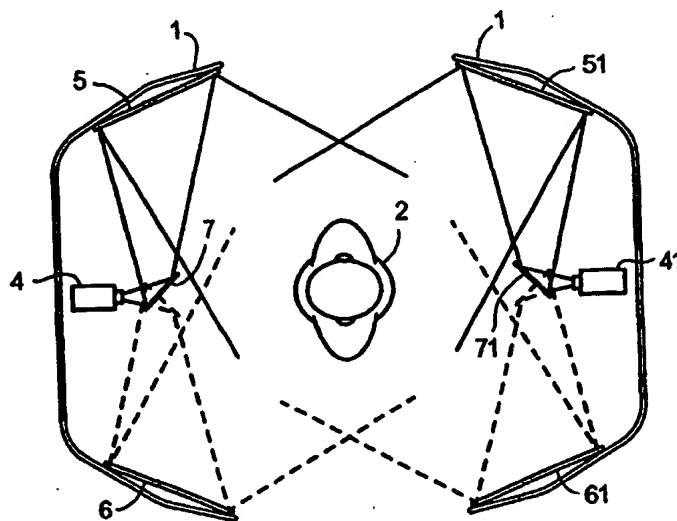
(74) Agents: MOLYNEAUX, Martyn, W. et al.; Langner Parry, 52/54 High Holborn, London WC1V 6RR (GB).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: BODY SCANNING EQUIPMENT



## (57) Abstract

A body scanning equipment includes at least two sets of apparatus located at a front and a rear respectively of a body (2) to be scanned, and each set of apparatus has a scanning device (4), mirrors (5), (6) spaced on opposing sides of the scanning device for directing radiant energy to opposing sides of the body and a pivotable mirror (7) for directing radiant energy alternatively between the scanning device and the first mirror (5) and the second mirror (6); by providing one pair of sets of apparatus a complete 360° circumference of a body may be scanned. By providing a further pair of sets of apparatus at a different elevation to the first pair of sets, so a complete human body may be scanned. The scanning apparatus is located in a booth (1) for installation in a store and output from the scanning apparatus is, preferably, provided to a garment material cutting apparatus (111).

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International Application No

PCT/GB 99/03821

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## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 305 107 A (L.B.P PARTNERSHIP) 1 March 1989 (1989-03-01)  see introduction; column 6, line 27 - line 47; figures 3-5 column 7, line 15 -column 9, line 29; figures 8A-9	1-4, 6-8  5, 8
P, X	EP 0 919 784 A (R. SEIFERT) 2 June 1999 (1999-06-02) se the whole document; figures 1-3B	1-9
X	WO 92 08949 A (MESACON GESELLSCHAFT FÜR MESSZECHNIK MBH) 29 May 1992 (1992-05-29) page 15, line 8 -page 21, line 30; figures 1-9	1-4, 6, 8

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

31 January 2000

Date of mailing of the international search report

07/02/2000

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03821

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